Appendix B

Information

The most important element of control is information. However, information alone has no meaning. This appendix expands the discussion of information in chapter 3. It addresses the following related concepts: the cognitive hierarchy of information, relevant information categories by subject (METT-TC) and by usage, information management categories, and relevant information quality criteria.

COGNITIVE HIERARCHY

B-1. ***Information*, in the general sense, is the meaning humans assign to data.** The cognitive hierarchy defines four different levels of meaning. (See figure B-1.) A principal task of information management (IM) is to collect information and transform it by adding progressively greater meaning at each level of the cognitive hierarchy. This process raises information from the lowest level, data, to the

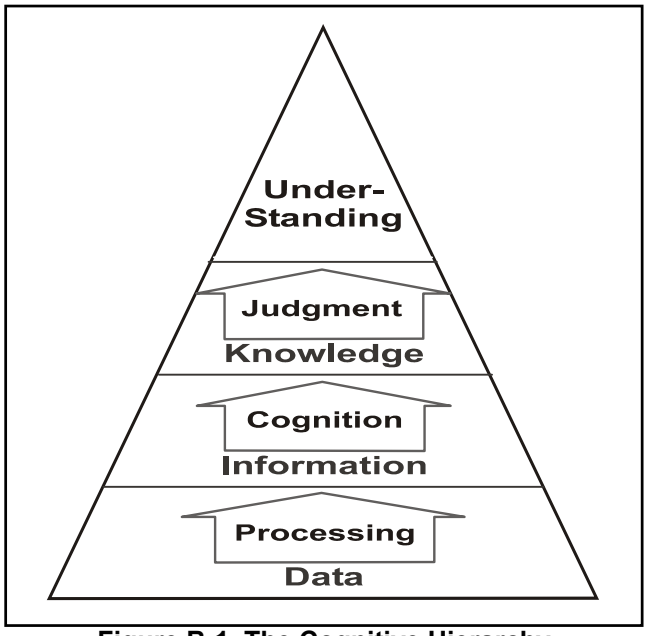

Figure B-1. The Cognitive Hierarchy

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highest, understanding. With understanding, commanders can make better decisions and more effectively regulate actions by their forces. Each level of information has a different value in supporting command and control (C2). The distinctions between the levels of the cognitive hierarchy are not always clear. However, it is important to realize that they exist.

B-2. Intelligence, a product that becomes relevant information (RI) within C2, falls into the second (information) and third (knowledge) levels of the cognitive hierarchy. Intelligence does not come as raw data; to be RI in C2, it must come through the intelligence cycle. The cycle of planning and directing, collecting, processing, analyzing and producing, and disseminating intelligence requires a substantial effort to overcome some unique and complex challenges. As both processed data (information) and analyzed and evaluated information (knowledge) about the enemy and environment, intelligence is crucial to commanders' achieving situational understanding.

DATA

B-3. ***Data*** **is the lowest level of information on the cognitive hierarchy. Data consist of unprocessed signals communicated between any nodes in an information system, or sensings from the environment detected by a collector of any kind (human, mechanical, or electronic).** Data is rarely useful until it is processed to give it meaning. The exception is combat information. *Combat information* is unevaluated data, gathered by or provided directly to the tactical commander which, due to its highly perishable nature or the criticality of the situation, cannot be processed into tactical intelligence in time to satisfy the user's tactical intelligence requirements (JP 1-02). Because of its nature, collectors often amass a lot of unimportant data. Until data is processed, it is often difficult to tell if it is relevant. However, as with all information, collectors should focus, as much as possible, only on data needed to determine the information required to build the common operational picture (COP).

INFORMATION

B-4. **In the context of the cognitive hierarchy,** ***information*** **is data that have been processed to provide further meaning.** Processing includes filtering, fusing, formatting, organizing, collating, correlating, plotting, translating, categorizing, and arranging. Information is useful for immediate application. It can be used to avoid threats, acquire targets, or take other immediate actions. Information forms the basis of the COP.

KNOWLEDGE

B-5. **In the context of the cognitive hierarchy,** ***knowledge*** **is information analyzed to provide meaning and value, or evaluated as to implications for the operation.** Cognition—the act of learning, of integrating from various pieces of information—allows commanders and staffs to generate knowledge. At this point, a product useful for decisionmaking forms. Commanders and staffs can recognize relationships among events in the area of interest, discern the way the enemy thinks, and forecast what he might do. Moreover, commanders and staffs begin to recognize what they do not yet understand—they identify the uncertainty that exists. Knowledge, including

aspects of running estimates, can often be represented on displays of the COP. Other knowledge products may be presented separately from, but in conjunction with, the COP.

UNDERSTANDING

B-6. **In the context of the cognitive hierarchy, *understanding* is knowledge that has been synthesized and had judgment applied to it in a specific situation to comprehend the situation's inner relationships.** Commanders may know what is happening and why. They and others apply judgment to transform that knowledge into understanding. Judgment is a purely human skill. It is based on experience, expertise, and intuition. While staffs may support commanders in achieving understanding, the most important understanding is that which commanders achieve. When commanders achieve situational understanding, they see patterns emerging from events in the area of interest. They can anticipate the consequences of both their own force's actions and the enemy's. While true understanding should be the basis for their decisions, commanders realize that uncertainty and time preclude achieving perfect situational understanding before deciding and acting.

INFORMATION TRANSFORMATION

B-7. As information moves up the hierarchy, the C2 system transforms it. (See figure B-1 on page B-0.) Processing transforms data into information. Because processing involves rote application of procedures, machines can process many types of data more quickly and efficiently than people. Cognition turns information into knowledge. To a degree, cognition relies on rules of logic or deduction; thus, expert systems and artificial intelligence can assist with cognition to some extent by helping integrate pieces of processed data. Cognition is primarily a human mental activity. It is not a procedural act, but an act of learning. Judgment, a purely human skill, transforms knowledge into understanding. The C2 system cannot reduce judgment to procedures or rules.

B-8. Integration occurs as information moves up the cognitive hierarchy. The commander and C2 system piece together multiple bits of data to make information; analysis and evaluation of numerous pieces of information produce knowledge. Finally, multiple forms of knowledge distill under judgment into understanding. This integration is essential to reaching understanding because it involves reducing the total number of bits to consider at any one time. If integration did not occur, commanders would be overwhelmed by bits of data or overloaded by a staggering number of factors.

B-9. Commanders need knowledge and understanding to make effective decisions. The goal in IM should not be processing vast amounts of data but processing the information necessary to bring commanders to an accurate situational understanding as quickly as possible. Commanders apply the final judgments, but effective IM provides knowledge and information in forms that make it easy to assimilate and understand.

RELEVANT INFORMATION SUBJECT CATEGORIES—METT-TC

B-10. *Relevant information* is all information of importance to the commander and staff in the exercise of command and control (FM 3-0). **In**

the context of information management, the six factors of METT-TC—mission, enemy, terrain and weather, troops and support available, time available, and civil considerations—make up the major subject categories into which relevant information is grouped for military operations. The commander and staff consider RI for each category in all military operations. The relative impact of each category may vary, but the commander and C2 system consider them all.

MISSION

B-11. The *mission* is the task, together with the purpose, that clearly indicates the action to be taken and the reason therefore (JP 1-02). It is always the first factor commanders consider during decisionmaking. (See FM 5-0.) A thorough understanding of the mission focuses decisionmaking throughout the operations process. Commanders analyze their missions and decisions in terms of the higher commander's intent, mission, and concept of operations. As commanders allocate tasks and resources to subordinates, they ensure their decisions support the decisive operation and the higher commander's intent. Commanders and staffs view all the other factors of METT-TC in terms of their impact on mission accomplishment.

B-12. The mission statement defines the *who, what, when, where*, and *why* of the operation. A thorough understanding of *why* the unit is conducting an operation provides the focus for planning. Commanders analyze a mission in terms of the intent of the two higher commanders and their concepts of operations. They also consider the missions of adjacent units to understand their contributions in relation to their own units.

B-13. When assigning missions, commanders ensure all their subordinates' missions support the decisive operation and the higher commander's intent. Under mission command, missions to subordinate commanders allow the greatest possible freedom of action. They are constrained only by those control measures that ensure necessary coordination. Ideally, commanders assign each subordinate a mission and an area of operations (AO) without further restrictions. However, some operations (such as a combined arms breaching operation) require greater control and coordination than others (such as an exploitation).

B-14. When analyzing a mission, commanders consider possible subsequent missions, focusing their planning resources on the most probable. They plan to exploit success and aggressively look for opportunities, keeping within the higher commander's intent.

ENEMY

B-15. The second factor to consider is the enemy—dispositions (including organization, strength, location, and tactical mobility), doctrine, equipment, capabilities, vulnerabilities, and probable courses of action (COAs). (See FM 34-130.)

B-16. The enemy, terrain and weather, and civil consideration contributions to the COP come from many sources, including intelligence, surveillance, and reconnaissance (ISR) assets and combat information. Of all RI, intelligence (RI on the enemy and environment) is inherently the most uncertain;

therefore the G-2 (S-2) carefully manages collection. To visualize enemy forces, commanders need detailed intelligence, such as, speed of advance, tempo, and strengths and weaknesses. Technology must display RI about enemy forces and significant aspects of the environment within the same digital frame of reference as friendly force information.

B-17. Once a commander initiates an operation, the enemy attempts to determine the friendly concept of operations and defeat it. Enemies react to every friendly move. When the enemy has the initiative, all friendly reactions to enemy actions result in an enemy counteraction. Consequently, commanders never assume their operations will unfold as planned. Enemies always have opportunities to unhinge them. Commanders look for enemy weaknesses and strengths in order to deny options to enemy commanders and keep them reacting to friendly maneuvers. Commanders analyze their forces for weaknesses and vulnerabilities that enemies might exploit, and act to counter them.

TERRAIN AND WEATHER

B-18. Terrain and weather are natural conditions. Commanders have only a limited ability to influence them, although terrain includes manmade structures, such as roads and cities. Human modification of terrain can change the shape of the land or its trafficability. It can also change local weather effects by modifying local wind or water pathways. Commanders consider manmade features and their effects on natural terrain features and climate when they analyze terrain. Commanders also consider the effects of manmade and natural terrain in conjunction with the weather on friendly and enemy operations. The second step of intelligence preparation of the battlefield (IPB) helps commanders with this complex task. (See FM 34-130.) Terrain and weather are relatively neutral; they favor neither side unless one is better prepared to operate in the environment or is more familiar with it (for example, fighting on friendly territory). Commanders analyze terrain and weather for favorable and unfavorable conditions. Enemy commanders do the same.

Terrain

B-19. The terrain has a direct impact on selecting objectives; location, movement, and control of forces; effectiveness of weapons and other systems; and protective measures. Effective use of terrain diminishes the effects of enemy fires, increases the effects of friendly fires, and facilitates surprise. The effects of terrain on operations vary, depending on whether a force is defending or attacking. For example, cross-compartmented terrain favors the defender and hinders the attacker.

B-20. An appreciation of terrain—the ability to analyze its impact on operations—is one of a commander's most important skills. Whenever possible, commanders perform a personal reconnaissance of the terrain where they plan to operate. IPB is critical to analyzing and understanding the effect of terrain on friendly and enemy COAs. Complete information on terrain is more than data on features, slope and elevation, soil conditions, and vegetation; it also includes their impact on vehicle and human movement rates, maintenance, tempo, trafficability, and maneuverability by various types of forces. Engineer topographic teams produce terrain analysis products to help

commanders visualize the effect of terrain on operations. These teams regularly update terrain information to reflect the effects of combat, as well as of nature. Terrain also includes environmental considerations, that is, the spectrum of environmental media, resources, or programs that affect and are affected by operations. Terrain is normally analyzed using the five military aspects of terrain, expressed in the memory aid, OAKOC:

- Observation and fields of fire.
- Avenues of approach.
- Key and decisive terrain.
- Obstacles.
- Cover and concealment.

Commanders consider all five aspects when analyzing terrain. They focus on the ones most relevant to the situation.

B-21. **Observation and Fields of Fire.** ***Observation*** **is the condition of weather and terrain that permits a force to see the friendly, enemy, and neutral personnel and systems, and key aspects of the environment.** Commanders evaluate their observation capabilities for electronic and optical line-of-sight surveillance systems, as well as for unaided visual observation. The highest terrain normally provides the best observation. For this reason, elevated terrain often draws enemy attention. A *field of fire* is the area that a weapon or group of weapons may cover effectively from a given position (JP 1-02). A unit's field of fire is directly related to its ability to observe.

B-22. The commander's analysis of observation and fields of fire considers many factors, including the location and effect of dead space. *Dead space* is an area within the maximum range of a weapon, radar, or observer, which cannot be covered by fire or observation from a particular position because of intervening obstacles, the nature of the ground, or the characteristics of the trajectory, or the limitations of the pointing capabilities of the weapon (JP 1-02). Commanders identify potential enemy and friendly engagement areas through observation and fields of fire.

B-23. **Avenues of Approach.** An *avenue of approach* is an air or ground route of an attacking force of a given size leading to its objective or to key terrain in its path (JP 1-02). An avenue of approach is categorized by the size and type of force that can use it, for example, a dismounted infantry company, an armored division, or an attack-helicopter company. A good avenue of approach allows ease of movement and good cover, concealment, observation, and fields of fire. It avoids obstacles and contributes to protection of the force by providing adequate maneuver space. Avenues of approach normally incorporate key terrain or deny its use to the enemy.

B-24. Corridors (ridge and valley systems) can either form natural avenues of approach (if they run toward an objective), or obstacles to movement (if they run perpendicular to the direction of movement, forming cross compartments). Troops using valleys as avenues of approach must control the adjacent ridges to protect their movement. Close or broken terrain, heavy woods, built-up areas, and abrupt changes in elevation hinder heavy forces but provide cover and concealment for light forces. Although open, rolling

terrain provides little concealment and cover to light forces, it is suited for rapid advances by heavy formations.

B-25. **Key Terrain and Decisive Terrain.** *Key terrain* is any locality or area, the seizure or retention of which affords a marked advantage to either combatant (JP 1-02). Two factors can make terrain key: how the friendly commander wants to use it, and whether the enemy can use it to defeat a friendly COA. Different COAs may have different key terrain associated with them. The same terrain feature may not be key for all COAs. Terrain adjacent to the AO may be key if its control is necessary to accomplish the mission.

B-26. *Decisive terrain* is key terrain whose seizure and retention is mandatory for successful mission accomplishment (FM 3-90). Decisive terrain is relatively rare; it is not necessarily present in every situation. Unlike key terrain, decisive terrain is not associated with any COA. By definition, the force cannot accomplish its mission without seizing and retaining decisive terrain. When commanders identify decisive terrain, they specify actions related to it as one or more key tasks in the commander's intent.

B-27. **Obstacles.** An *obstacle* is any obstruction designed or employed to disrupt, fix, turn, or block the movement of an opposing force, and to impose additional losses in personnel, time, and equipment on the opposing force. Obstacles can be natural, manmade, or a combination of both (JP 1-02). Obstacles fall into two categories: existing and reinforcing. The types of existing obstacles are natural, manmade, and military. The types of reinforcing obstacles are tactical and protective. A reinforcing obstacle's effectiveness varies with the type of force negotiating it, the fires covering it, the nature of the obstacle, and the weather. (See FM 5-102.)

B-28. **Cover and Concealment. *Cover* is protection from the effects of fires.** *Concealment* is protection from observation and surveillance (JP 1-02). Terrain that offers cover and concealment limits fields of fire. Commanders consider cover and concealment to identify potential friendly and enemy locations. They look for possible assembly areas, routes, axes of movement, assault positions, ambushes, and battle positions. They consider both friendly and enemy perspectives.

Weather

B-29. Weather and climate have direct and indirect effects on tactical operations. Climate is a longer-term but more predictable phenomenon than weather. Planners consider climate with longer-range plans, while most tactical planning considers weather. Effective commanders use weather and climate to their advantage.

B-30. For planning purposes, weather is a shorter-term, but less predictable, phenomenon than climate. Weather affects the condition and capabilities of soldiers and weapon systems, including, trafficability, visibility, obstacle emplacement times, and munitions performance. Weather effects are classified as direct and indirect:

- *Direct effects* are those that immediately affect the operations of friendly and enemy forces. They do not favor one side or the other. Their relative impact on each force is a function only of that force's preparation.

- *Indirect effects* are those on other elements of the environment—terrain and human, military and nonmilitary—that either hamper or help military operations of one or both forces.

B-31. Weather can create opportunities as well as difficulties for each side. For example, bad weather can favor the attacker by concealing a moving force while making construction of fighting positions more difficult for the defender. Simultaneously, bad weather can help the defender by making offensive movement more difficult. Stable weather conditions favor the use of chemical and biological agents. Cold weather slows both soldiers and machines; however, it freezes water and allows movement across normally wet areas that are otherwise difficult to pass.

TROOPS AND SUPPORT AVAILABLE

B-32. The fourth factor of METT-TC is the number, type, capabilities, and condition of available friendly troops and support. These include supplies and support available from joint, multinational, and interagency forces. They also include support from Department of Defense and Department of the Army civilians, and contractors employed by military organizations, such as, the Defense Logistics Agency and the Army Materiel Command.

B-33. Commanders should know the disposition and situation of their forces without having to visit each unit on the ground. They generally maintain information of friendly forces two levels down. They maintain understanding of subordinates' readiness, including, maintenance, training, strengths and weaknesses, commanders, and logistic status. Thus, commanders visit units to confirm reports or obtain better understanding of the operation's decisive points or factors. These visits also provide insights into the intangibles that data and reports cannot capture.

B-34. Commanders consider available troops and support when analyzing whether they have enough resources to accomplish a mission. If commanders determine that they do not, they request more from the higher commander. Increasing assets in one area may compensate for a shortage of assets in another. Under mission command, commanders ensure they provide subordinates with the right mix of troops and support to accomplish the missions they assign. Commanders consider tangible and intangible factors when assigning missions. Differences in mobility, protection, firepower, equipment, morale, experience, leadership, and training make some units more suitable for certain missions than others. The personalities of subordinate commanders are also important: A bold commander may be a good choice for a pursuit mission. A methodical commander may be a better choice for a deliberate breaching operation.

TIME AVAILABLE

B-35. Effective commanders and staffs know how much time and space their units need to plan, prepare, and execute operations. This includes the time required to assemble, deploy, move, and converge units to mass the effects of combat power effectively. They also consider time with respect to the enemy: time available is always related to the enemy's ability to plan, prepare, and execute operations, and react effectively to friendly actions. Time available

varies with unit size and mission. It also depends on how much time is usable; for example, for some activities, hours of darkness are useable time, while for others they are not.

B-36. Consideration of time available further includes the time subordinate commanders and units require to plan and prepare their own operations. (See FM 5-0.) Parallel planning can help make the most of time available. Commanders can save more time by using standing operating procedures (SOPs), tactics, techniques, and procedures (TTPs), and habitual relationships. SOPs promote understanding and teamwork among commanders, staffs, and subordinates. TTPs include battle drills and tactical actions that lend themselves to standardized execution, such as refuel-on-the-move site operations. Standard supporting plans, such as rear area security plans, are a form of TTP. Commanders use rehearsals to fit TTPs to the situation. Habitual relationships in task organization also save preparation time. Units and soldiers who work together frequently already know each other's SOPs and how they use TTPs. They can begin working together more quickly than units not habitually associated.

CIVIL CONSIDERATIONS

B-37. ***Civil considerations*** **comprise the influence of manmade infrastructure, civilian institutions, and attitudes and activities of the civilian leaders, populations, and organizations within an area of operations on the conduct of military operations.** They are a factor in all types of military operations: offense, defense, stability, and support. If the military's mission is to support civil authorities, civil considerations define the mission.

B-38. Civil considerations generally focus on the immediate impact of civilians on operations in progress; however, they also include larger, long-term diplomatic, informational, and economic issues at higher levels. At the tactical level, they directly relate to key civilian areas, structures, capabilities, organizations, people, and events within the AO. Discounting these can tax the resources of follow-on elements. The world's increasing urbanization means that the attitudes and activities of the civilian population in the AO often influence the outcome of military operations. Civil considerations of the environment can either help or hinder friendly or enemy forces; the difference lies in which commander has taken time to learn the situation and its possible effects on the operation. These considerations can influence the choice of a COA and the execution of operations.

B-39. Some effects of civil considerations may impede overall force activities; others affect soldiers directly, preventing them from functioning to their full capability. Anticipation and preparation can often overcome these effects, or even turn them to friendly advantage. This holds particularly true for civil considerations, where careful preparation can turn parts of civil populations into advantages for friendly forces and disadvantages for enemy forces.

B-40. An appreciation of civil considerations—the ability to analyze their impact on operations—enhances several aspects of operations: among them, the selection of objectives; location, movement, and control of forces; use of

weapons; and force protection measures. Civil considerations comprise six characteristics, expressed in the memory aid ASCOPE:

- Areas.
- Structures.
- Capabilities.
- Organizations.
- People.
- Events.

Areas

B-41. Key civilian areas are localities or aspects of the terrain within an AO that are not normally militarily significant. This characteristic approaches terrain analysis (OAKOC) from a civilian perspective. Commanders analyze key civilian areas in terms of how they affect the missions of their individual forces as well as how military operations affect these areas. Examples of key civilian areas are—

- Areas defined by political boundaries, such as, districts within a city or municipalities within a region.
- Locations of government centers.
- Social, political, religious, or criminal enclaves.
- Agricultural and mining regions.
- Trade routes.
- Possible sites for the temporary settlement of dislocated civilians or other civil functions.

Failure to consider key civilian areas can seriously affect the success of any operation.

Structures

B-42. Existing structures can play many significant roles. Some—such as, bridges, communications towers, power plants, and dams—are traditional high-payoff targets. Others—such as, churches, mosques, national libraries, and hospitals—are cultural sites that international law or other agreements generally protect. Still others are facilities with practical applications—such as, jails, warehouses, television and radio stations, and print plants—that may be useful for military purposes. Some aspects of the civilian infrastructure, such as the location of toxic industrial materials, may influence operations.

B-43. Analyzing a structure involves determining how its location, functions, and capabilities can support the operation. Commanders also consider the consequences of using it. Using a structure for military purposes often competes with civilian requirements for it. Commanders carefully weigh the expected military benefits against costs to the community that will have to be addressed in the future.

Capabilities

B-44. Commanders and staffs analyze capabilities from different levels. They view capabilities in terms of those required to save, sustain, or enhance life, in that priority. Capabilities can refer to the ability of local authorities—

those of the host nation, aggressor nation, or some other body—to provide a populace with key functions or services, such as, public administration, public safety, emergency services, and food. Capabilities include those areas in which the populace may need help after combat operations, such as, public works and utilities, public health, economics, and commerce. Capabilities also refer to resources and services that can be contracted to support the military mission, such as, interpreters, laundry services, construction materials, and equipment. The host nation or other nations might provide these resources and services.

Organizations

B-45. Organizations are nonmilitary groups or institutions in the AO. They influence and interact with the populace, the force, and each other. They generally have a hierarchical structure, defined goals, established operations, fixed facilities or meeting places, and a means of financial or logistic support. Some organizations may be indigenous to the area. These may include church groups, fraternal organizations, patriotic or service organizations, labor unions, criminal organizations, and community watch groups. Other organizations may come from outside the AO. Examples of these include multinational corporations, United Nations agencies, US governmental agencies, and nongovernmental organizations (NGOs), such as the International Red Cross.

B-46. Operations also often require commanders to coordinate with international organizations and NGOs. Commanders remain familiar with organizations operating in their AOs. RI includes information about their activities, capabilities, and limitations. Situational understanding includes understanding how the activities of different organizations may affect military operations and how military operations may affect these organizations' activities. From this, commanders can determine how organizations and military forces can work together toward common goals when necessary.

B-47. Corps and divisions routinely interact with other US agencies, host-nation governmental agencies, and NGOs. In some circumstances, brigades and battalions also have to interact with these organizations. These groups may not share the commander's objectives and point of view.

B-48. In almost every case, military forces have more resources than civilian organizations. However, civilian organizations may possess specialized capabilities that they may be willing to share with military forces. Commanders do not command civilian organizations in their AOs. However some operations require achieving unity of effort between them and the force. These situations require commanders to influence the leaders of these organizations through persuasion. They produce constructive results by the force of argument and the example of their actions. (See FM 22-100.)

People

B-49. *People* is a general term used to describe nonmilitary personnel encountered by military forces. The term includes all civilians within an AO as well as those outside the AO whose actions, opinions, or political influence can affect the mission. Individually or collectively, people can affect a

military operation positively, negatively, or neutrally. In stability operations and support operations, Army forces work closely with civilians of all types.

B-50. There can be many different kinds of people living and operating in and around an AO. As with organizations, people may be indigenous or introduced from outside the AO. An analysis of people should identify them by their various capabilities, needs, and intentions. It is useful to separate people into distinct categories. When analyzing people, commanders consider historical, cultural, ethnic, political, economic, and humanitarian factors. They also identify the key communicators and the formal and informal processes used to influence people.

Events

B-51. *Events* are routine, cyclical, planned, or spontaneous activities that significantly affect organizations, people, and military operations. Examples include national and religious holidays, agricultural crop/livestock and market cycles, elections, civil disturbances, and celebrations. Other events are disasters from natural, manmade, or technological sources. These create civil hardship and require emergency responses. Examples of events precipitated by military forces include combat operations, deployments, redeployments, and paydays. Once significant events are determined, it is important to template the events and to analyze them for their political, economic, psychological, environmental, and legal implications.

B-52. Technological innovation, external social influences, and natural and manmade disasters (such as, hurricanes, environmental damage, and war) affect the attitudes and activities of governments and civilian populations. These changes cause stress in the civilian population and its leaders. The civilian population may or may not successfully incorporate these changes within its existing cultural value system. Addressing the problems posed by change requires considerable time and resources. The impatience of key leaders and groups, legal restrictions, and limits on resources can make resolution difficult. However, when their resolution is necessary to accomplish the mission, commanders become concerned with them.

B-53. The existence of an independent press guarantees that US military activities that do not meet America's military standards for dealing with noncombatants will be reported in US, host-nation, and international public forums. Commanders consider the effects of their decisions and their forces' actions on public opinion. The activities of a force—or individual members of a force—can have far-reaching effects on the legitimacy of all military operations—offense, defense, stability, or support. Commanders ensure their soldiers understand that a tactically successful operation can also be operationally or strategically counterproductive because of the way in which they execute it or how the people perceive its execution.

B-54. Commanders have legal and moral responsibilities to refugees and noncombatants in their AOs. These responsibilities may include providing humanitarian assistance. A commander's moral responsibility to protect noncombatants influences planning and preparing for operations. Commanders assess the chance that their actions may result in dislocated civilians and

consider their legal obligation to respect and protect them when choosing a COA and executing an operation.

RELEVANT INFORMATION USAGE CATEGORIES

B-55. Relevant information is also placed into four categories based on how it is used:

- COP-related information.
- Execution information.
- Exceptional information
- Essential elements of friendly information.

COP-RELATED INFORMATION

B-56. RI used to create the COP is *COP-related information*. The C2 system collects RI—friendly, enemy, and environmental—and uses it to create the COP. Commanders base their situational understanding on the COP. Staffs base their running estimates on the COP. Commanders base their decision-making on their situational understanding, using the COP and recommendations from staff running estimates. COP-related information is grouped into the major subject categories of METT-TC.

B-57. Information systems (INFOSYS) now available provide commanders at all levels with near real-time RI on the current situation in the form of the COP. The COP is derived from data, information, and knowledge common to all echelons. The commander and staff tailor their display for resolution and content appropriate to their echelon of command and the mission.

B-58. Reports normally convey COP-related information. Usually reports have a prescribed purpose and format. (See FM 101-5-2.) They may transmit exceptional information, answers to the CCIR, and routine information.

EXECUTION INFORMATION

B-59. ***Execution information*** **is information that directs, initiates, or regulates action, conduct, or procedure.** It provides a means for communicating a clearly understood vision of an operation and its desired outcome that guides subordinates as they carry out decisions. The source of execution information is the commander's decisions. Execution information takes many forms: including, orders, plans, directives, memorandums, and regulations. Orders, including fragmentary orders (FRAGOs) and warning orders (WARNOs), and plans constitute the primary means of communicating execution information.

EXCEPTIONAL INFORMATION

B-60. ***Exceptional information*** **is information that would have answered one of the commander's critical information requirements if the requirement for it had been foreseen and stated as one of the commander's critical information requirements.** It is treated as an answer to one of the CCIR and reported to the commander immediately by any method available. Exceptional information is—

- Unexpected, unplanned, and situation-dependent.

- An immediate priority for command and staff action. The commander and staff must address exceptional information before the operation can continue.
- Extremely time-sensitive in terms of decisionmaking; there can be no delays in transmission.
- Transmitted directly to the commander as quickly as possible by whatever means are immediately available.
- Applicable to both the friendly and enemy situations.

B-61. Exceptional information results from an unexpected extraordinary event, such as an unforeseen opportunity for success or an early warning of an unforeseen threat. By its nature, identifying exceptional information relies on the initiative of subordinate commanders and the staff. Unlike information that answers CCIR, exceptional information is neither published nor explicitly stated. That is because the requirement for it was not identified beforehand or the situation that produced it is completely unanticipated. Therefore, tactically and technically competent subordinates and staffs must recognize it as vital. This requires the commander and subordinate commanders to share an accurate situational understanding. It also requires subordinates to thoroughly understand the commander's intent.

B-62. Exceptional information is processed as an answer to one of the CCIR. (See paragraphs B-68–B-72.) Exceptional information directly affects either mission accomplishment or survival of the force. It is passed to the commander by the fastest possible means. By definition, commanders need it to make a decision. Often, the exceptional information itself presents a decision the commander must make.

ESSENTIAL ELEMENTS OF FRIENDLY INFORMATION

B-63. *Essential elements of friendly information* are the critical aspects of a friendly operation that, if known by the enemy, would subsequently compromise, lead to failure, or limit success of the operation, and therefore must be protected from enemy detection (FM 3-13). EEFI answer the question, How can I (the commander) prevent the enemy force from seeing me?

B-64. Commanders designate EEFI and transmit them to their staffs and subordinates. When established, EEFI have a priority on a level with CCIR. Identification of EEFI is the first action in the operations security (OPSEC) process, which commanders use to determine measures to protect this information (OPSEC measures). (See FM 3-13.) EEFI state the friendly force information that, if compromised to the enemy, would place mission accomplishment in jeopardy. EEFI are often key factors in designing military deception operations. They form the basis for some security operations.

B-65. EEFI are neither IRs nor part of the CCIR. EEFI establish information to protect, not information to obtain. Friendly forces must take all necessary measures to ensure that this information does not fall into enemy hands. However, commanders may determine that they need to know whether one or more of the EEFI have been compromised or that the enemy is collecting against a designated EEFI. In those cases, commanders may designate that question as one of their CCIR, which generates PIR or FFIR. For example, a commander may determine that if the enemy discovers the location and

movement of the friendly reserve, the operation is at risk. In this case, the location and movement of the friendly reserve are EEFI. The commander designates determining whether the enemy has discovered the location and movement of the friendly reserve as one of the CCIR. That CCIR, in turn, generates PIR and FFIR to support staff actions that determine whether the information has been compromised.

INFORMATION MANAGEMENT CATEGORIES

B-66. IM provides the structure through which the C2 system collects, processes, displays, store, and disseminates information, and puts the commander's decisions into action. (See paragraphs 3-39–3-73.) IM consists of two elements: INFOSYS (see paragraphs 5-38–5-72) and RI.

B-67. Large amounts of RI are collected as a routine part of operations. It is provided by standard reports and ISR activities. Some RI is essential for ongoing tasks staffs perform, regardless of the type of mission. Other RI is mission-specific and assets must be specifically tasked to collect it. Because collection assets are limited, a method of prioritizing collection and processing is required. CCIR and IR are the categories used to prioritize collection asset allocation and information processing within the C2 system.

COMMANDER'S CRITICAL INFORMATION REQUIREMENTS

B-68. *Commander's critical information requirements* are elements of information required by commanders that directly affect decisionmaking and dictate the successful execution of military operations (FM 3-0). CCIR result from the analysis of IRs in the context of a mission and commander's intent. Commanders limit them to a useable number for comprehension. Commanders designate CCIR to let their staffs and subordinates know what information they deem necessary for decisionmaking. All CCIR are not tied to decision points; however, some CCIR may support one or more decision points. In all cases, the fewer the CCIR, the better the staff can focus its efforts and allocate scarce resources.

B-69. CCIR belong to the commander alone. Commanders decide what IRs are critical IRs based on their individual cognitive abilities and commander's visualization. Staffs may recommend CCIR, based on mission analysis during planning and on assessment during preparation and execution; however, they keep the number of recommended CCIR to a minimum.

B-70. CCIR are not static. Commanders add, delete, adjust, and update them throughout an operation based on the information they need for decisionmaking. CCIR are—

- Specified by the commander for each operation.
- Applicable only to the commander who specifies them.
- Situation-dependent—directly linked to current and future missions.
- Focused on predictable events or activities.
- Time-sensitive. Answers to CCIR must be immediately reported to the commander by any means available.

- Always established by an order or plan. During planning, CCIR are established by WARNO. During preparation and execution, changes to CCIR are disseminated by FRAGO.

B-71. CCIR limit information reported to commanders to information critical to decisionmaking. During planning, CCIR focus on information needed to determine which COA to choose. During preparation and execution, CCIR focus on information needed to validate the selected COA or determine when to initiate critical events, such as a branch or sequel. CCIR may include a latest time information of value (LTIOV) to indicate time sensitivity.

B-72. CCIR include priority intelligence requirements (PIRs) and friendly forces information requirements (FFIR). PIR focus on "how I (the commander) see the enemy." FFIR focus on "how I see myself." Although CCIR generate PIR and FFIR for management, the focus for the staff is answering the CCIR to support the commander's visualization and decisionmaking.

- *Priority intelligence requirements* are those intelligence requirements for which a commander has an anticipated and stated priority in his task of planning and decisionmaking (JP 1-02). PIRs identify the information the commander considers most important for decisionmaking. They concern both the enemy (including the time available to the enemy) and the environment (terrain, weather, and some civil considerations).
- ***Friendly forces information requirements*** **are information the commander and staff need about the forces available for the operation.** FFIR consist of information on the mission, troops and support available, and time available for friendly forces.

INFORMATION REQUIREMENTS

B-73. ***Information requirements*** **are all information elements the commander and staff require to successfully conduct operations; that is, all elements necessary to address the factors of METT-TC.** (The joint definition of *information requirements* [IRs] includes only intelligence requirements; the Army definition encompasses all RI.) A headquarters must focus IRs on RI. Commanders do this through designating CCIR. Effective staffs ensure that the vast amount of other information they collect is truly RI and not just nice to have. Each BOS develops its own IRs to answer CCIR and perform its functional responsibilities. IRs must be related to the unit mission; unfocused requests may provide plenty of data, but not much RI.

B-74. Figure B-2 (on page B-16) shows the relationship of IM, RI, and IRs. IM begins (at the lower left corner of figure B-2) with questions that the commander and staff need answered to exercise C2. These questions become IRs. From the IRs, the staff recommends designating some as PIRs or FFIR. From the staff recommendations, or from his own priorities, the commander designates his CCIR. This provides a clear set of priorities for allocating resources to answer IRs. The staff allocates resources first to answer CCIR, then to PIRs and FFIR, and only then to the remaining IRs. In the case of PIRs, especially PIR that are CCIR, resource allocation involves tasking ISR assets to collect the information and process it into intelligence.

B-75. As information that answers IRs is collected, soldiers in the C2 system enter it into databases maintained in C2-system INFOSYS. These databases form the basis of the COP. Staffs identify RI for their particular IRs from the mass of available data within the COP and transform it into knowledge and understanding. This transformation includes developing and maintaining staff running estimates. Commanders draw on the COP and these running estimates to gain situational understanding.

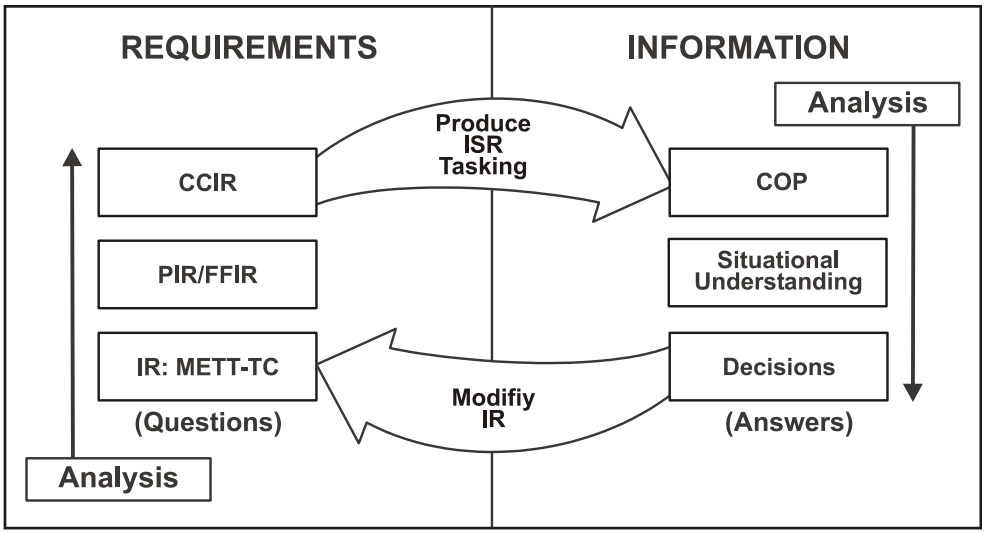

Figure B-2. Relevant Information Production and Flow

B-76. IM is a dynamic process that supports commanders in the fast-moving operational environment. (See figure B-2.) During operations, answers to IRs, especially the CCIR, contribute to assessments of the operation's progress that result in decisions by commanders and staff members. These decisions and assessments produce new questions that address the changed situation and future command decisions. These questions require staffs to modify IRs and commanders to modify their CCIR. These changed IRs produce changes to collection taskings. It occurs continually. Staffs review IRs frequently to ensure they are still relevant and to identify new IRs to support the commander's decisionmaking.

B-77. Figure B-3 illustrates the relationships among the cognitive hierarchy, IRs, and CCIR. The hierarchy shows where meaning is added to data as the C2 system processes it. The C2 system collects data from various sources to answer IRs. It adds meaning to data as it processes it into information, organizing it in terms of METT-TC and creating the COP. Staffs use information from the COP to answer CCIR, including PIRs and FFIR, and to maintain their running estimates. Commanders apply their judgment to information from the COP and running estimates to achieve situational understanding. Based on their situational understanding and recommendations from the running estimates, commanders make decisions and revise the CCIR as needed to fill gaps in information needed to make future decisions.

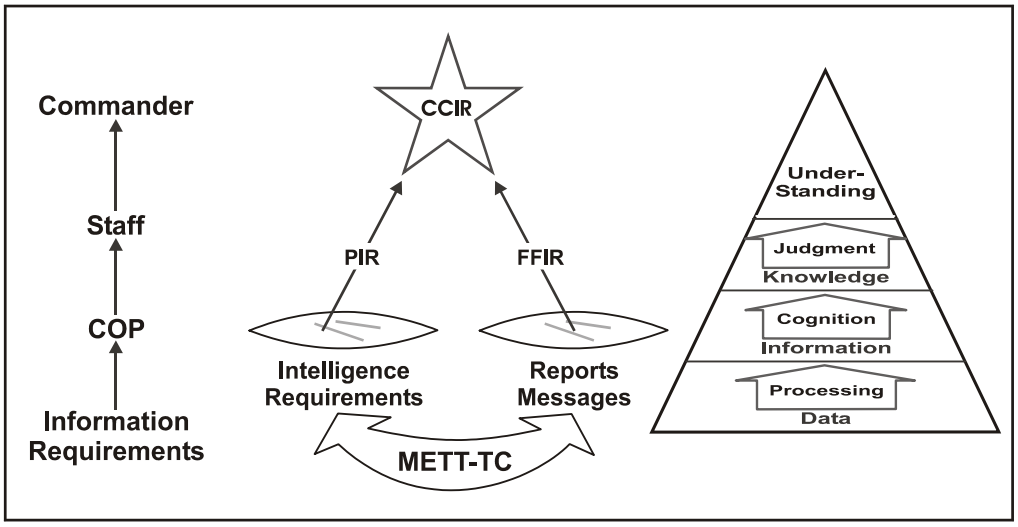

Figure B-3. Information Requirements and Cognitive Hierarchy

RELEVANT INFORMATION QUALITY CRITERIA

B-78. Because sources of information are imperfect and susceptible to distortion and deception, IM includes carefully assessing information quality. The following criteria, listed in relative order of importance, help do this:

- **Accuracy.** The extent to which the information conveys the true situation, the degree to which it is fact.
- **Timeliness.** The extent to which the information still reflects reality. Timely information is not overtaken by events.
- **Usability.** The extent to which the information is easily understood or displayed in a format that immediately conveys the meaning.
- **Completeness.** The extent to which the information contains all necessary components.
- **Precision.** The extent to which the information has the required level of detail, no more and no less.
- **Reliability.** The extent to which the information is trustworthy, uncorrupted, and undistorted.

B-79. The following priorities apply:

- Incomplete or imprecise information is *better than* no information.
- Untimely or unusable information is *the same as* no information.
- Irrelevant or inaccurate information is *worse than* no information.

B-80. In general, commanders do not require RI beyond a moderate level to accomplish their individual missions, so long as it is accurate, timely, and usable. Beyond that, more RI can help commanders achieve mission success at reduced cost; however, waiting for that RI may carry an unacceptable cost in timeliness. Effective IM focuses on CCIR. Keeping this focus demands vision on the part of the commander and understanding of the commander's intent and CCIR by subordinates. This understanding allows subordinates to identify and recognize information needed to answer CCIR. It is essential to identifying exceptional information.